What is claimed is:

1. A packing cartridge for use in a packing bore of a plunger-type pump, wherein the packing bore has a generally cylindrical interior wall and a seat, the packing cartridge comprising:
   a. a generally-cylindrical sleeve having an outer cylindrical profile adapted to be at least partially positioned in the packing bore;
   b. a first abutment ring positioned in the sleeve;
   c. a second abutment ring positioned in the sleeve and co-axially spaced apart from the first abutment ring;
   d. telescoping structures operatively positioned between the first abutment ring and the second abutment ring; and
   e. a retaining ring operatively positioned between the telescoping structures to retain the telescoping structures together.

2. The packing cartridge according to Claim 1, wherein the telescoping structures and the retaining ring allow for squeezing of the first abutment ring and the second abutment ring co-axially closer to one another after positioning the packing cartridge in the packing bore.

3. The packing cartridge according to Claim 2, wherein the telescoping structures have at least sufficient overlapping travel to allow for the expected crushing of packing during the operation of a plunger though the packing cartridge.

4. The packing cartridge according to Claim 2, further comprising: a spring operatively positioned between the first abutment ring and the second abutment ring.

5. The packing cartridge according to Claim 4, wherein the telescoping structures have at least sufficient overlapping travel to help maintain the first abutment ring and second abutment ring in substantial co-axial alignment while the spring is anywhere between a substantially relaxed condition and a substantially compressed condition.

6. The packing cartridge according to Claim 1, wherein the sleeve further comprises a first portion and a second sleeve portion, and wherein the telescoping structures are operatively positioned between the first and second sleeve portions.

7. The packing cartridge according to Claim 6, wherein the first sleeve portion has a first sleeve portion adapted to be positioned in at least a portion of the packing bore; and the second sleeve portion has at least a portion thereof telescopically positioned in at least a portion of the first sleeve portion.

8. The packing cartridge according to Claim 6, wherein the first abutment ring is operatively connected to the first sleeve portion and the second abutment ring is operatively connected to the second sleeve portion.

9. The packing cartridge according to Claim 6, wherein the first abutment ring is integrally formed with the first sleeve portion and the second abutment ring is integrally formed with the second sleeve portion.

10. The packing cartridge according to Claim 6, further comprising a spacer ring operatively positioned to cover the overlapping travel of the telescoping structures between the first and second sleeve portions.

11. The packing cartridge according to Claim 1, wherein the telescoping structures are operatively positioned between the sleeve and one of the first and second abutment rings.

12. The packing cartridge according to Claim 11, wherein the other one of the first and second abutment rings is integrally formed with the sleeve.

13. The packing cartridge according to Claim 1, wherein the retaining ring comprises a resilient ring adapted to be positioned in a groove in one of the telescoping structures, whereby the resilient ring frictionally engages the other telescoping structure to resist separation of the telescoping structures.

14. The packing cartridge according to Claim 1, wherein the retaining ring comprises a snap ring adapted to be snapped in axially overlapping grooves in each of the telescoping structures, whereby the snap ring engages the grooves to resist separation of the telescoping structures.

15. A packing cartridge according to Claim 1, further comprising: packing positioned between the first abutment ring and the second abutment ring.

16. The packing cartridge according to Claim 15, wherein the packing further comprising a plurality of packing elements.

17. The packing cartridge according to Claim 16, wherein at least one packing spacer is positioned between any two of the plurality of packing elements.

18. The packing cartridge according to Claim 1, further comprising:
    a. a structure forming a circumferential pressure-ring groove; and
    b. a pressure ring positioned in the pressure-ring groove, the pressure ring having at least one smaller external dimension than an internal dimension of the pressure-ring groove, whereby at least one clearance is provided between the pressure-ring groove and the pressure ring.

19. The packing cartridge according to Claim 18, wherein the pressure ring has a slightly smaller internal diameter than the outside diameter of a plunger, which provides a tight interference fit of the pressure ring on the plunger.

20. The packing cartridge according to Claim 19, wherein the pressure ring has an inwardly facing surface with a low coefficient of friction.

21. The packing cartridge according to Claim 19, wherein the pressure ring has a relatively thin wall thickness to allow for expansion of the pressure ring over the diameter of the plunger.

22. The packing cartridge according to Claim 18, wherein a sealing ring is positioned adjacent the clearance between the pressure-ring groove and the pressure ring to reduce seepage around the clearance.

23. The packing cartridge according to Claim 18, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least sufficient for forming a small fluid reservoir.

24. The packing cartridge according to Claim 23, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least 0.01 inch.

25. The packing cartridge according to Claim 24, wherein the pressure ring has a smaller O.D. than an I.D. of the pressure-ring groove.

26. The packing cartridge according to Claim 24, wherein the pressure ring has a smaller width than a width of the pressure-ring groove.

27. The packing cartridge according to Claim 24, wherein the pressure ring has both a smaller O.D. than an I.D. of the pressure groove and a smaller width than a width of the pressuring-ring groove.

28. The packing cartridge according to Claim 24, wherein the pressure ring is at least partially formed of a plastic.

29. The packing cartridge according to Claim 28, wherein the plastic is a fluorocarbon.

30. The packing cartridge according to Claim 18, wherein the structure forming the pressure-ring retaining groove is a portion of the first abutment ring or the second abutment ring.

31. The packing cartridge according to Claim 18, wherein the structure forming the pressure-ring retaining groove is a portion of the first sleeve portion or second sleeve portion.

32. The packing cartridge according to Claim 18, wherein the structure forming the pressure-ring retaining groove is a housing ring adapted to be positioned between the first and second abutment rings.

33. A packing cartridge for use in a packing bore of a plunger-type pump, wherein the packing bore has a generally cylindrical interior wall and a seat, the packing cartridge comprising:

a. a generally-cylindrical sleeve having an outer cylindrical profile adapted to be at least partially positioned in the packing bore;

b. a first abutment ring positioned in the sleeve;

c. a second abutment ring positioned in the sleeve and co-axially spaced apart from the first abutment ring;

d. a means for telescoping operatively positioned between the first abutment ring and the second abutment ring; and

e. a means for axially retaining the means for telescoping together.

34. The packing cartridge according to Claim 33, wherein the means for telescoping and the means for axially retaining allow for squeezing of the first abutment ring and the second abutment ring co-axially closer to one another after positioning the packing cartridge in the packing bore.

35. The packing cartridge according to Claim 34, wherein the means for telescoping has at least sufficient overlapping travel to allow for the expected crushing of packing during the operation of a plunger though the packing cartridge.

36. The packing cartridge according to Claim 34, further comprising: a spring means operatively positioned between the first abutment ring and the second abutment ring.

37. The packing cartridge according to Claim 36, wherein the means for telescoping has at least sufficient overlapping travel to help maintain the first abutment ring and second abutment ring in substantial co-axial alignment while the spring is anywhere between a substantially relaxed condition and a substantially compressed condition.

38. The packing cartridge according to Claim 33, wherein the sleeve further comprises a first portion and a second sleeve portion, and wherein the means for telescoping is operatively positioned between the first and second sleeve portions.

39. The packing cartridge according to Claim 38, wherein the means for telescoping comprises: the first sleeve portion having a first sleeve portion adapted to be positioned in at least a portion of the packing bore; and the second sleeve portion having at least a portion thereof telescopically positioned in at least a portion of the first sleeve portion.

40. The packing cartridge according to Claim 38, wherein the first abutment ring is operatively connected to the first sleeve portion and the second abutment ring is operatively connected to the second sleeve portion.

41. The packing cartridge according to Claim 38, wherein the first abutment ring is integrally formed with the first sleeve portion and the second abutment ring is integrally formed with the second sleeve portion.

42. The packing cartridge according to Claim 38, further comprising a spacer ring operatively positioned to cover the overlapping travel of the means for telescoping.

43. The packing cartridge according to Claim 33, wherein the means for telescoping is operatively positioned between the sleeve and one of the first and second abutment rings.

44. The packing cartridge according to Claim 43, wherein the other one of the first and second abutment rings is integrally formed with the sleeve.

45. The packing cartridge according to Claim 33, wherein the means for axially retaining comprises:

a. a retaining groove and a receiving groove cooperatively positioned in the means for telescoping; and

b. a snap ring positioned in the retaining groove for snapping into the receiving groove, whereby when the snap ring in the retaining groove is moved axially into alignment with the receiving groove, the snap ring snaps into the receiving groove and resists separation of the means for telescoping.

46. The packing cartridge according to Claim 33, wherein the means for axially retaining comprises:

a. a retaining groove and an interference surface cooperatively positioned in the means for telescoping; and

b. a resilient ring positioned in the retaining groove for frictionally engaging the interference surface, whereby when the resilient ring in the retaining groove is moved axially against the interference surface, the resilient ring frictionally engages the interference surface and resists separation of the means for telescoping.

47. A packing cartridge according to Claim 33, further comprising: packing positioned between the first abutment ring and the second abutment ring.

48. The packing cartridge according to Claim 47, wherein the packing further comprising a plurality of packing elements.

49. The packing cartridge according to Claim 48, wherein at least one packing spacer is positioned between any two of the plurality of packing elements.

50. The packing cartridge according to Claim 33, further comprising:

a. a structure forming a circumferential pressure-ring groove; and

b. a pressure ring positioned in the pressure-ring groove, the pressure ring having at least one smaller external dimension than an internal dimension of the pressure-ring groove, whereby at least one clearance is provided between the pressure-ring groove and the pressure ring.

51. The packing cartridge according to Claim 50, wherein the pressure ring has a slightly smaller internal diameter than the outside diameter of a plunger, which provides a tight interference fit of the pressure ring on the plunger.

52. The packing cartridge according to Claim 51, wherein the pressure ring has an inwardly facing surface with a low coefficient of friction.

53. The packing cartridge according to Claim 51, wherein the pressure ring has a relatively thin wall thickness to allow for expansion of the pressure ring over the diameter of the plunger.

54. The packing cartridge according to Claim 50, wherein a sealing ring is positioned adjacent the clearance between the pressure-ring groove and the pressure ring to reduce seepage around the clearance.

55. The packing cartridge according to Claim 50, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least sufficient for forming a small fluid reservoir.

56. The packing cartridge according to Claim 56, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least 0.01 inch.

57. The packing cartridge according to Claim 56, wherein the pressure ring has a smaller O.D. than an I.D. of the pressure-ring groove.

58. The packing cartridge according to Claim 56, wherein the pressure ring has a smaller width than a width of the pressure-ring groove.

59. The packing cartridge according to Claim 56, wherein the pressure ring has both a smaller O.D. than an I.D. of the pressure groove and a smaller width than a width of the pressuring-ring groove.

60. The packing cartridge according to Claim 56, wherein the pressure ring is at least partially formed of a plastic.

61. The packing cartridge according to Claim 60, wherein the plastic is a fluorocarbon.

62. The packing cartridge according to Claim 50, wherein the structure forming the pressure-ring retaining groove is a portion of the first abutment ring or the second abutment ring.

63. The packing cartridge according to Claim 50, wherein the structure forming the pressure-ring retaining groove is a portion of the first sleeve portion or second sleeve portion.

64. The packing cartridge according to Claim 50, wherein the structure forming the pressure-ring retaining groove is a housing ring adapted to be positioned between the first and second abutment rings.

65. A packing cartridge for use in a packing bore of a plunger-type pump, wherein the packing bore has a generally cylindrical interior wall and a seat, the packing cartridge comprising:

a. a first element comprising:

i. a first sleeve portion adapted to be positioned in at least a portion of the packing bore; and

ii. a first abutment ring positioned to extend inwardly and substantially circumferentially relative to the first sleeve portion; and

b. a second element comprising:

i. a second sleeve portion having at least a portion thereof telescopically positioned in at least a portion of the first sleeve portion; and

ii. a second abutment ring positioned to extend inwardly and substantially circumferentially relative to the second sleeve portion.

66. The packing cartridge according to Claim 65, further comprising a spacer ring operatively positioned to cover the overlapping travel of the first and second sleeve portions.

67. The packing cartridge according to Claim 65, wherein the telescoping structures and the means for axially retaining allow for squeezing of the first abutment ring and the second abutment ring co-axially closer to one another after positioning the packing cartridge in the packing bore.

68. The packing cartridge according to Claim 65, further comprising: a spring operatively positioned between the first abutment ring and the second abutment ring.

69. The packing cartridge according to Claim 68, wherein the telescoping structures and the means for axially retaining allow for squeezing of the first abutment ring and the second

abutment ring co-axially closer to one another after positioning the packing cartridge in the packing bore.

70. The packing cartridge according to Claim 69, wherein the telescoping first and second sleeve portions have at least sufficient overlapping travel to help maintain the first abutment ring and second abutment ring in substantial co-axial alignment while the spring is anywhere between a substantially relaxed condition and a substantially compressed condition.

71. A packing cartridge according to Claim 65, further comprising: a means for axially retaining the first and second sleeve portions together.

72. The packing cartridge according to Claim 71, wherein the means for axially retaining comprises:

a. a retaining groove and a receiving groove cooperatively positioned in the first and second sleeve portions; and

b. a snap ring positioned in the retaining groove for snapping into the receiving groove, whereby when the snap ring in the retaining groove is moved axially into alignment with the receiving groove, the snap ring snaps into the receiving groove and resists separation of the first and second sleeve portions.

73. The packing cartridge according to Claim 71, wherein the means for axially retaining comprises:

a. a retaining groove and an interference surface cooperatively positioned between the first and second sleeve portions; and

b. a resilient ring positioned in the retaining groove for frictionally engaging the interference surface, whereby when the resilient ring in the retaining groove is moved axially against the interference surface, the resilient ring frictionally engages the interference surface and resists separation of the first and second sleeve portions.

74. The packing cartridge according to Claim 71, further comprising a spacer ring operatively positioned to cover the overlapping travel of the first and second sleeve portions.

75. The packing cartridge according to Claim 71, wherein the telescoping structures and the means for axially retaining allow for squeezing of the first abutment ring and the second abutment ring co-axially closer to one another after positioning the packing cartridge in the packing bore.

76. The packing cartridge according to Claim 71, further comprising: a spring operatively positioned between the first abutment ring and the second abutment ring.

77. The packing cartridge according to Claim 76, wherein the telescoping structures and the means for axially retaining allow for squeezing of the first abutment ring and the second abutment ring co-axially closer to one another after positioning the packing cartridge in the packing bore.

78. The packing cartridge according to Claim 76, wherein the telescoping first and second sleeve portions have at least sufficient overlapping travel to help maintain the first abutment ring and second abutment ring in substantial co-axial alignment while the spring is anywhere between a substantially relaxed condition and a substantially compressed condition.

79. A packing cartridge according to Claim 71, further comprising: packing positioned between the first abutment ring and the second abutment ring.

80. The packing cartridge according to Claim 79, wherein the packing further comprising a plurality of packing elements.

81. The packing cartridge according to Claim 80, wherein at least one packing spacer is positioned between any two of the plurality of packing elements.

82. The packing cartridge according to Claim 71, wherein the first abutment ring is integrally formed with the first sleeve portion and the second abutment ring is integrally formed with the second sleeve portion.

83. The packing cartridge according to Claim 65, further comprising at least one gap extending at least partially circumferentially of the first or second abutment ring to be positioned in contact with the seat of the packing bore, whereby the gap provides a lip for engaging and assisting in the pulling of the packing cartridge away from the seat and out of the interior wall of the packing bore.

84. The packing cartridge according to Claim 65, further comprising:

a. a structure forming a circumferential pressure-ring groove; and

b. a pressure ring positioned in the pressure-ring groove, the pressure ring having at least one smaller external dimension than an internal dimension of the pressure-ring groove, whereby at least one clearance is provided between the pressure-ring groove and the pressure ring.

85. The packing cartridge according to Claim 84, wherein the pressure ring has a slightly smaller internal diameter than the outside diameter of a plunger, which provides a tight interference fit of the pressure ring on the plunger.

86. The packing cartridge according to Claim 85, wherein the pressure ring has an inwardly facing surface with a low coefficient of friction.

87. The packing cartridge according to Claim 85, wherein the pressure ring has a relatively thin wall thickness to allow for expansion of the pressure ring over the diameter of the plunger.

88. The packing cartridge according to Claim 84, wherein a sealing ring is positioned adjacent the clearance between the pressure-ring groove and the pressure ring to reduce seepage around the clearance.

89. The packing cartridge according to Claim 84, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least sufficient for forming a small fluid reservoir.

90. The packing cartridge according to Claim 90, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least 0.01 inch.

91. The packing cartridge according to Claim 90, wherein the pressure ring has a smaller O.D. than an I.D. of the pressure-ring groove.

92. The packing cartridge according to Claim 90, wherein the pressure ring has a smaller width than a width of the pressure-ring groove.

93. The packing cartridge according to Claim 90, wherein the pressure ring has both a smaller O.D. than an I.D. of the pressure groove and a smaller width than a width of the pressuring-ring groove.

94. The packing cartridge according to Claim 90, wherein the pressure ring is at least partially formed of a plastic.

95. The packing cartridge according to Claim 94, wherein the plastic is a fluorocarbon.

96. The packing cartridge according to Claim 84, wherein the structure forming the pressure-ring retaining groove is a portion of the first abutment ring or the second abutment ring.

97. The packing cartridge according to Claim 84, wherein the structure forming the pressure-ring retaining groove is a portion of the first sleeve portion or second sleeve portion.

98. The packing cartridge according to Claim 84, wherein the structure forming the pressure-ring retaining groove is a housing ring adapted to be positioned between the first and second abutment rings.

99. A packing cartridge for use in a packing bore of a plunger-type pump, wherein the packing bore has a generally cylindrical interior wall and a seat, the packing cartridge comprising:

a. a sleeve adapted to be at least partially inserted into the packing bore;

b. a structure forming a circumferential pressure-ring groove; and

c. a pressure ring positioned in the pressure-ring groove, the pressure ring having at least one smaller external dimension than an internal dimension of the pressure-ring groove, whereby at least one clearance is provided between the pressure-ring groove and the pressure ring.

100. The packing cartridge according to Claim 99, wherein the pressure ring has a slightly smaller internal diameter than the outside diameter of a plunger, which provides a tight interference fit of the pressure ring on the plunger.

101. The packing cartridge according to Claim 100, wherein the pressure ring has an inwardly facing surface with a low coefficient of friction.

102. The packing cartridge according to Claim 100, wherein the pressure ring has a relatively thin wall thickness to allow for expansion of the pressure ring over the diameter of the plunger.

103. The packing cartridge according to Claim 99, wherein a sealing ring is positioned adjacent the clearance between the pressure-ring groove and the pressure ring to reduce seepage around the clearance.

104. The packing cartridge according to Claim 99, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least sufficient for forming a small fluid reservoir.

105. The packing cartridge according to Claim 105, wherein the difference between the external dimension of the pressure ring and the internal dimension of the pressure-ring groove is at least 0.01 inch.

106. The packing cartridge according to Claim 105, wherein the pressure ring has a smaller O.D. than an I.D. of the pressure-ring groove.

107. The packing cartridge according to Claim 105, wherein the pressure ring has a smaller width than a width of the pressure-ring groove.

108. The packing cartridge according to Claim 105, wherein the pressure ring has both a smaller O.D. than an I.D. of the pressure groove and a smaller width than a width of the pressuring-ring groove.

109. The packing cartridge according to Claim 105, wherein the pressure ring is at least partially formed of a plastic.

110. The packing cartridge according to Claim 109, wherein the plastic is a fluorocarbon.

111. The packing cartridge according to Claim 99, further comprising:

a. a first abutment ring positioned in the sleeve;

b. a second abutment ring positioned in the sleeve and co-axially spaced apart from the first abutment ring;

c. a means for telescoping operatively positioned between the first abutment ring and the second abutment ring to allow for squeezing of the first abutment ring and the second abutment ring co-axially closer to one another; and

d. a means for axially retaining the means for telescoping together.

112. The packing cartridge according to Claim 110, wherein the structure forming the pressure-ring retaining groove is a portion of the first abutment ring or the second abutment ring.

113. The packing cartridge according to Claim 110, wherein the structure forming the pressure-ring retaining groove is a housing ring adapted to be positioned between the first and second abutment rings.

114. The packing cartridge according to Claim 99, wherein the structure forming the pressure-ring retaining groove is a portion of the sleeve.

115. A method of using the packing cartridge according to any one of Claims 1, 33, 65, and 99 in a packing bore of a plunger-type pump, the method comprising the steps of:

a. inserting the packing cartridge at least partially into the packing bore; and

b. releasably securing the packing cartridge in the packing bore.

116. The method according to Claim 115, further comprising the step of, prior to inserting the packing cartridge, clearing the packing bore.

117. The method according to Claim 115, further comprising the step of, prior to inserting the packing cartridge, inserting a plunger through the packing cartridge.

118. The method according to Claim 86, further comprising the step of, after inserting the packing cartridge, inserting a plunger through the packing cartridge.

119. The method according to Claim 115, wherein the step of releasably securing the packing cartridge in the packing bore further comprises the steps of:

a. positioning one end of the packing cartridge against the seat of the packing bore; and

b. tightening a threaded connector to secure a gland over the packing cartridge and capture the packing cartridge in the packing bore.

120. The method according to Claim 115, further comprising the steps of:

a. unsecuring the packing cartridge in the packing bore;

b. removing the packing cartridge out of the packing bore;

c. inserting a similar, replacement packing cartridge into the packing bore; and

d. securing the replacement packing cartridge in the packing bore.

121. A plunger-type pump having the packing cartridge according to any one of Claims 1, 33, 65, and 99 positioned in a packing bore of the pump.

122. A method of pumping a fluid from a low-pressure fluid source to a high-pressure fluid outlet with the plunger-type fluid pump according to Claim 121, the method comprising the steps of:

a. connecting the low-pressure fluid source to a suction port of the pump;

b. connecting the high-pressure fluid outlet to a discharge port of the pump; and

c. reciprocating the plunger in the packing cartridge and the plunger bore to pump fluid from the low-pressure fluid source to the high-pressure fluid outlet.

123. A packing element for use in a packing bore of a plunger-type pump, wherein the packing bore has a generally cylindrical interior wall and a seat, the packing element comprising:

a. a housing forming a circumferential pressure-ring groove; and

b. a pressure ring positioned in the pressure-ring groove, the pressure ring having at least one smaller external dimension than an internal dimension of the pressure-ring groove, whereby at least one clearance is provided between the pressure-ring groove and the pressure ring.

124. The packing cartridge according to Claim 123, wherein the pressure ring has a slightly smaller internal diameter than the outside diameter of a plunger, which provides a tight interference fit of the pressure ring on the plunger.

125. The packing cartridge according to Claim 124, wherein the pressure ring has an inwardly facing surface with a low coefficient of friction.

126. The packing cartridge according to Claim 124, wherein the pressure ring has a relatively thin wall thickness to allow for expansion of the pressure ring over the diameter of the plunger.

127. The packing cartridge according to Claim 69, wherein the telescoping first and second sleeve portions have at least sufficient overlapping travel to help maintain the first abutment ring and second abutment ring in substantial coaxial alignment while the spring is anywhere between a substantially relaxed condition and a substantially compressed condition.

128. A packing cartridge according to Claim 65, further comprising a means for axially retaining the first and second sleeve portions together.

129. The packing cartridge according to Claim 128, wherein the means for axially retaining comprises:

a. a retaining groove and a receiving groove cooperatively positioned in the first and second sleeve portions; and

b. a snap ring positioned in the retaining groove for snapping into the receiving groove, whereby when the snap ring in the retaining groove is moved axially into alignment with the receiving groove, the snap ring snaps into the receiving groove and resists separation of the first and second sleeve portions.

130. The packing cartridge according to Claim 128, wherein the means for axially retaining comprises:

a. a retaining groove and an interference surface cooperatively positioned between the first and second sleeve portions; and

b. a resilient ring positioned in the retaining groove for frictionally engaging the interference surface, whereby when the resilient ring in the retaining groove is moved axially against the interference surface, the resilient ring frictionally engages the interference surface and resists separation of the first and second sleeve portions.

131. The packing cartridge according to Claim 128, further comprising a spacer ring operatively positioned to cover the overlapping travel of the first and second sleeve portions.